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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/694,225	10/23/2000	Breck W. Lovinggood	47176-00538	1027

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EXAMINER

ORGAD, EDAN

ART UNIT PAPER NUMBER

2684

DATE MAILED: 07/08/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/694,225

Applicant(s)

LOVINGGOOD ET AL.

Examiner

Edan Orgad

Art Unit

2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54, 56-60 and 63-86 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☒ Claim(s) 8, 12-15, 17, 26, 31, 32, 40, 44-46, 48-54, 57-59 and 72 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2, 4, 7, 9.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Response to Election

Applicant's election without traverse of claims 1-54, 56-59 and 63-86 in the reply filed on 4/19/04 is acknowledged.

Examiners note: although an error was introduced in office action # 10 (restriction dated 3/22/04), due to confusing numbering of dependent claims.

Since, restriction should have not included dependent claims 56-59 in group II, but rather claims 56-59 should have been part of group I. Applicant's non-election of these claims is omitted. Claims will be examined due to their dependencies of an elected group I and treated as elected claims.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 4, 7, 9, 18, 20-22, 24, 25, 27, 33-38, 41 and 74 -80 are rejected under the judicially created doctrine of double patenting over claim 1-31 of U. S. Patent No.

6,745,003 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: an integrated repeater comprising: a donor antenna mounted closely adjacent to one of the opposing sides of said housing; a null antenna mounted closely adjacent to the other of said opposing sides of said housing; repeater electronics mounted in said housing and operatively interconnecting said donor antenna and said null antenna; and a beamforming arrangement for creating a desired antenna pattern of said donor antenna and a desired antenna pattern of said null antenna (see claim 1 of patent number 6,745,003). A downlink channel module and an uplink channel module operatively coupled between said donor and null antennas (see claim 1 of patent number 6,745,003, col. 5, lines 26-28). An interference cancellation circuit for substantially canceling radio frequency interference feedback signals between said donor and null antennas in both an uplink path and a downlink path (see claim 1 of patent number 6,745,003, col. 5, lines 29-36). A modulator circuit comprises a controllable attenuator which receives and attenuates the radio frequency output signal and an I/Q modulator coupled to said attenuator and to said processor (see patent number 6,745,003, col. 7, lines 36-40).

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claims 5, 6, 10, 11, 19, 23, 29, 30, 42, 43, 47, 56, 60 and 81-86 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-31 of U.S. Patent No. 6,745,003. Although the conflicting claims are not identical, they are not patentably distinct from each other because these claims all teach limitations that are well known in the art (i.e., patch antenna, separate receive and transmit antennas, controllers for controlling the repeater, amplifiers for amplifying antenna signals, flat panel antennas, absorbent materials, orthogonally polarized antennas and solar battery housing) and therefore would have been obvious to one of ordinary skill in the art at time the invention was made to use.

Claims 3 and 28, are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-31 of U.S. Patent No. 6,745,003 (Meca et al) in view of Butler et al (US 6,133,868).

Regarding claims 3 and 28, Meca fails to specifically disclose a beamforming arrangement includes a Butler matrix comprising a part of said repeater electronics and operatively coupled with each of said donor antenna array and said null antenna array. However, in the same field of endeavor, Butler teaches the use of a butler matrix as part of an integrated repeater (col. 10, lines 18-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include Butler's butler matrix with Meca's repeater in order to amplify a portion of each signal at each low pass amplifier.

Claims 16 and 39 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-31 of U.S. Patent No. 6,745,003 (Meca et al) in view of Acampora et al (US 4,301,533).

Regarding claims 16 and 39, Meca discloses said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements. However, fails to specifically disclose said beamforming arrangement includes a plurality of phase shifters respectively coupled with the antenna elements and each of said donor antenna array and said null antenna array, a controller for controlling operation of said phase shifting elements, and said phase shifting elements being coupled with a corporate feed to a radio frequency output. However, in the same field of endeavor, Acampora teaches a plurality of phase shifters respectively coupled with the antenna elements (col. 7, lines 63-67), a controller for controlling operation of said phase shifting elements, and said phase shifting elements being coupled with a corporate feed to a radio frequency output (col. 8, lines 1-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include Acampora's phase shifters with controller with Meca's repeater's in order to increase the rain margin of Meca's repeater in case the repeater were to be used in a satellite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 63-70 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bi et al (US 5,835,848) in view of Justice et al (US 5,600,333).

Regarding claim 63, Bi teaches a method of repeating a radio frequency signal comprising: receiving said radio frequency signal at one of a donor antenna (element 13) mounted on one of opposing sides of a housing and a null antenna (element 14) mounted on the other of said opposing sides of said housing (see fig. 2, antennas are on opposite sides); routing said signal through repeater electronics mounted in said housing and operatively interconnecting said donor antenna and said null antenna (elements 22-26 and element 28); transmitting said radio frequency signal from the other of said donor and null antennas; and beamforming for a desired antenna pattern of said donor antenna and a desired antenna pattern of said null antenna (col. 2, lines 20-42). However, Bi does not disclose a housing having a surface. However, if not inherent, it would have been obvious for a repeater to include a housing having a surface to mount the antennas as taught by Justice (col. 3, lines 1-24). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to adapt the housing having a surface for mounting at least one of the antenna elements of Justice to the repeater of Bi for mounting the antenna.

Regarding claim 64, Bi teaches canceling radio frequency interference feedback signals between said donor and null antennas in both an uplink path and a downlink path (col. 2, lines 28-52).

Regarding claims 65 and 66, Bi fails to specifically disclose providing setup, communications and monitoring functions for the repeater. However, it is inherent to Bi's repeater to provide setup, communications and monitoring function if not for the simple fact to have the repeater operational.

Regarding claims 67 and 69, Bi fails to disclose storing angle and elevation information for use in said beamforming. However, official notice is taken that it is well known to store angle and elevation information for use in said beamforming. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to store angle and elevation information for use in said beamforming with Bi's invention in order to provide more accurate power conservation means.

Regarding claims 68 and 70, Bi teaches an amplifier gain of amplifiers coupled intermediate said donor antenna and said null antenna (element 23).

Regarding claim 73, Bi teaches said beamforming comprises rotating said donor antenna and said null antenna (col. 2, lines 39-42).

Claim 71 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bi et al (US 5,835,848) in view of Justice et al (US 5,600,333) and further in view of Acampora et al (US 4,301,533).

Regarding claim 71, Bi fails to disclose said beamforming includes phase shifting antenna elements in a donor antenna array and a null antenna array using a controller and coupling phase shifted signals via a corporate feed to a radio frequency output. However, in the same field of endeavor, Acampora teaches a plurality of phase shifters respectively coupled with the antenna elements (col. 7, lines 63-67), a controller for controlling

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operation of said phase shifting elements, and said phase shifting elements being coupled with a corporate feed to a radio frequency output (col. 8, lines 1-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include Acampora's phase shifters with controller with Meca's repeater's in order to increase the rain margin of Meca's repeater in case the repeater were to be used in a satellite.

Allowable Subject Matter

Claims 8, 12-15, 17, 26, 31, 32, 40, 44-46, 48-54, 57-59 and 72 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 12, 14 and 31, the prior art of record (specifically Butler et al US 6,133,868) teaches an integrated repeater comprising beamforming arrangement that comprises a Butler matrix comprising a part of said repeater electronics (see Butler et al, col. 10, lines 18-35). However, neither Butler alone or in combination with any other prior disclose including a memory for storing angle and elevation information for use in operating said Butler matrix.

Regarding claims 8, 17, 26, 40 and 72, the prior art of records fails to an integrated repeater wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements and wherein said beamforming arrangement includes a plurality of stripline feeds of varying lengths coupled with said

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antenna elements and a switching circuit for selecting one or more of said striplines to achieve a desired stripline delay.

Regarding claims 44, 45, 48, 49, 52, 53, 57 and 58, the prior art of records fails to disclose an integrated repeater further including a quantity of radio frequency absorbent material between at least some of said chokes.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,194,873, antenna system providing a spherical radiation pattern.

US 3,917,998, Butler matrix transponder.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edan Orgad whose telephone number is 703-305-4223. The examiner can normally be reached on 8:00AM to 5:30PM with every other Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 703-305-4223. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edan Orgad

EO

June 24, 2004

Nay Maung
NAY MAUNG
SUPERVISORY PATENT EXAMINER

Continuation of Disposition of Claims: Claims rejected are 1-7, 9-11, 16, 18-25, 27-30, 33-39, 41-43, 47, 56, 60, 63-71 and 73-86.